

ATTACHMENT - REMARKS

By this Amendment, independent claims 1, 27, 44 and 45 have been amended to better define the invention; while dependent claim 42 has been amended to correct a redundant recitation. It is submitted that the present application is in condition for allowance for the following reasons.

Claim Objections

In response to the objection raised by the examiner to dependent claim 42 for having a repeated limitation, an appropriate and self-evident deletion has been made in claim 42.

Claim Rejections - 35 USC § 103

In the Detailed Action, the Examiner rejects independent claims 1, 27, 44 and 45 as well as respective dependent claims 2-4, 7-17, 22-26, 28-30, 33-34, 37-39 and 42-43 as being unpatentable over Hailey in view of Andoh.

Concerning independent claims 1, 27, 44 and 45, the Examiner contends that Hailey discloses all the features of these claims apart from laser machining or a laser machine, as required by these claims.

The Applicant respectfully disagrees. Firstly, Hailey fails to disclose a number of the essential features of these claims. Hailey does not disclose bonding a thin metal foil to an insulating substrate (or a thin metal foil bonded to such an insulating substrate). Indeed, if anything, Hailey teaches against metallic coating part 302 being a "thin metal foil" (as submitted previously); that is, as depicted in Figures 3 and 4A, metallic coating

part 302 appears to be of substantial thickness and not "thin" by any reasonable definition of the term which would be understood by those of ordinary skill in the art.

In addition, Hailey does not disclose the formation of a component blank having a metal face that comprises a surface of a metal foil, nor does Hailey disclose an "insulating substrate." In the latter regard, the Examiner identifies printed circuit board structure 300 of Figure 3 as disclosing the presently claimed insulating substrate, but printed circuit board structure 300 includes first metallic conducting part 302 and second metallic conducting part 304 (see column 2, lines 59 to 63), so it cannot correctly or fairly be described as "insulating" as would be understood by those of ordinary skill. In fact, first and second metallic parts 302, 304 are described as constituting "conducting plane 306" (see column 2, line 63) so, clearly, multi-layer printed circuit board structure 300 does not meet any reasonable definition of an "insulating substrate".

Furthermore, Hailey does not disclose electrical components in which foil tracks are provided, as Hailey is exclusively concerned with printed circuit boards. Moat 306 of Figures 3 and 4A, for example, is not provided for defining one or more foil tracks. Rather, moat 306 separates first and second metallic coating parts 302, 304, which are not – considered alone or in combination – foil tracks. In fact, Hailey himself describes first and second metallic conducting parts 302, 304 as able to be characterized as a sort of "parallel plate" capacitor (see column 3, line 8).

It is also particularly clear that Hailey fails to disclose filing a trench or moat with a trench filling material without overlaying said metal face with said trench filling material (or a trench filled with the trench filling material applied without overlaying said metal face). It is important to understand the implications of this feature, which is not merely a

product without overlaying trench filling material. Rather, it defines a product in whose manufacture trench filling material does not overlay the metal face. This results in there being no need to remove such trench filling material after the trenches have been filled, in order to expose the metal face. Such removal can result in contamination of, or damage to, that metal face. That is, even if it were held that the device of Hailey did not have overlaying trench filling material, this would still not meet the aforementioned limitation recited in the independent claims of the present application, as there is no disclosure in Hailey of a manufacturing method that avoids overlaying the metal face with trench filling material. Indeed, the usual manufacturing technique employed in this field includes the overlaying of at least some trench filling material and its subsequent removal (such as by means of a solvent). The present invention explicitly avoids the need to remove such material.

The Applicant also submits that combining the teachings of Hailey and Andoh would not add the laser machining as defined in the independent claims of the present application. Andoh, it is true, refers to "laser beam machining" (see paragraph 6, lines 18 and 19), but only for the purpose of forming "via holes" (not trenches) in a substrate (see paragraph 6, lines 17 to 19, paragraph 45, line 4, paragraph 51, lines 1 and paragraph 66, lines 1 to 4). However, Andoh in no way suggests laser machining at least the metal foil of a component blank to produce at least one trench for defining one or more foil tracks (as recited in independent method claims 1 and 44), or at least one laser machined trench for defining one or more foil tracks (as recited in independent component claims 27 and 45). Andoh teaches laser machining only for forming holes, and only for forming such holes in a dielectric substrate (not a thin metal foil).

Thus, Andoh in no way suggests the particular use of laser machining defined in the independent claims of the present application.

It will also be appreciated that this distinction in the manner of employing laser machining is by no means trivial. Drilling a hole in a material by laser machining is a straightforward matter, as no relative movement of the laser and material is required, and no control over the laser is required to prevent the laser from penetrating the full thickness of the material (rather, full penetration is the desired result). According to the present invention, trenches are formed by laser machining, hence requiring substantial technical control over relative movement between the laser machine and the electrical component, *and* the laser machining must fully penetrate the metal foil ("said trench being at least equal in depth to the thickness of the foil") but without fully penetrating the insulating substrate (see page 8, lines 14 to 33 of the application as filed) lest the mechanical integrity of the substrate be compromised. The independent claims have all been amended to further clarify the latter feature, whereby the trenches are formed by laser machining without fully penetrating the insulating substrate. In using a laser machine to drill via holes through a substrate, neither technical consideration arises.

Thus, combining the teaching of Andoh with that of Hailey would not provide all the features of the independent claims of the present application, nor suggest the use of laser machining as defined in those claims, whether to manufacture the printed circuit boards of Hailey or otherwise.

It is submitted, therefore, that the independent claims of the present application as amended, and the claims depending therefrom, are indeed patentable over the combination of Hailey and Andoh.

Concerning the dependent claims, the examiner is referred to the observations filed previously concerning the failure of Hailey to anticipate various features of those claims which are herein incorporated by reference. It is further submitted that Andoh fails to make good those omissions concerning laser machining for the reasons discussed above.

The examiner also rejects dependent claims 5-6 and 31-32 as unpatentable over Hailey and Andoh as applied to independent claim 1 [and independent claim 27], and further in view of Hirose; and claims 18-21, 35-36, and 40-41 as unpatentable in view of Hailey, Andoh, Hirose and Chen. Similarly, the Examiner is referred to the Applicant's previous remarks and, in addition, it is submitted that Andoh fails to make good the shortcomings of the other documents concerning laser machining for the reasons discussed above.

For all of the foregoing reasons, it is submitted that the present application is in condition for allowance and such action is solicited.

Respectfully submitted,

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